1. Eur J Pediatr. 2010 Jun;169(6):681-8. Epub 2009 Oct 13. Accidental intakes of remedies from complementary and alternative medicine in children--analysis of data from the Swiss Toxicological Information Centre. Zuzak TJ, Rauber-Lüthy C, Simões-Wüst AP.

The use of complementary and alternative medicine (CAM) in Switzerland is rather high, and therefore, the occurrence of accidental intakes of CAM remedies by children and associated intoxications is to be expected. In the present study, the inquiries to the Swiss Toxicological Information Centre that took place from 1998 until 2007 and concerned accidental, unintended intakes of CAM remedies by children were analysed. Inquiries for information were performed by concerned care-givers, physicians, pharmacists and others in case of acute accidental intake of CAM remedies. Feedbacks from physicians about paediatric patients with acute intoxication possibly associated with the accidental ingestion of CAM remedies were as well considered. During the study period, 3,158 accidental intakes of CAM remedies (1,015 of herbal and 2,143 of homeopathic remedies) were reported, corresponding to 8.6% of all reported accidental intakes of pharmaceutical products by children. No significant increase of the yearly number of accidental intakes of CAM remedies was detected during the study period. There was no accidental intake of CAM remedies leading to severe signs or symptoms. Concerning the herbal remedies, three intoxications of moderate and 28 of minor severity were reported. Nine children with intoxication from homeopathic remedies were reported, with minor symptoms only. All other accidental intakes of CAM remedies did not lead to intoxications and evolved without manifestations. The data show that accidental, unintended intake of CAM remedies happened in children, but developed mostly harmlessly. Comparing herbal with homeopathic remedies, accidental intakes with homeopathic remedies were more common, but intoxications associated with manifestations were observed more frequently with herbal remedies.

6. Pediatr Clin North Am. 2007 Dec;54(6):875-84. Ethics of complementary and alternative medicine use in children. Vohra S, Cohen MH.

Complementary and alternative medicine (CAM) has enjoyed tremendous public interest in North America in recent years. CAM is used most often by those who have serious, chronic, or recurrent illness, sometimes for symptom control and sometimes to combat the primary disease. Others use CAM to promote wellness or as a prophylaxis. CAM therapies are increasingly being offered in conventional medical settings and at various other centers and institutes. The relevant ethical commitments or values that must be considered are social commitment to public welfare, nonmaleficence, respect for patient autonomy/consumer choice, recognition of medical pluralism, and public accountability. This article explores the major ethical principles involved in pediatric CAM use and how they affect clinical care and research.

11. Mayo Clin Proc. 2007 Jan;82(1):69-75. Homeopathy for childhood and adolescence ailments: systematic review of randomized clinical trials. Altunç U, Pittler MH, Ernst E.

OBJECTIVE: To assess the evidence of any type of therapeutic or preventive intervention testing homeopathy for childhood and adolescence ailments.

METHODS: Systematic literature searches were conducted through January 2006 in MEDLINE, EMBASE, AMED, CINAHL, Cochrane Central, British Homeopathic Library, ClinicalTrials.gov, and the UK National Research Register. Bibliographies were checked for further relevant publications. Studies were selected according to predefined inclusion and exclusion criteria. All double-blind, placebo-controlled randomized clinical trials of any homeopathic intervention for preventing or treating childhood and adolescence ailments were included. According to the classification of the World Health Organization, the age range defined for inclusion was 0 to 19 years. Study selection, data extraction, and assessment of methodological quality were performed independently by 2 reviewers.

RESULTS: A total of 326 articles were identified, 91 of which were retrieved for detailed evaluation. Sixteen trials that assessed 9 different conditions were included in the study. With the exception of attention-deficit/hyperactivity disorder and acute childhood diarrhea (each tested in 3 trials), no condition was assessed in more than 2 double-blind randomized clinical trials. The evidence for attention-deficit/hyperactivity disorder and acute childhood diarrhea is mixed, showing both positive and negative results for their respective main outcome measures. For adenoid vegetation, asthma, and upper respiratory tract infection each, 2 trials are available that suggest no difference compared with placebo. For 4 conditions, only single trials are available.

CONCLUSION: The evidence from rigorous clinical trials of any type of therapeutic or preventive intervention testing homeopathy for childhood and adolescence ailments is not convincing enough for recommendations in any condition.

13. Eur J Pediatr. 2003 Dec;162(12):820-7. Epub 2003 Sep 26. Patterns and perceptions of complementary/alternative medicine among paediatricians and patients' mothers: a review of the literature. Cuzzolin L, Zaffani S, Murgia V, Gangemi M, Meneghelli G, Chiamenti G, Benoni G.

For many families and their children, the use of complementary/alternative medicine (CAM) is an accepted adjunct or alternative to conventional therapy, even if data available in the literature regarding risks and adverse drug reactions (ADRs) pertaining to childhood populations are scarce. Moreover, despite widespread and increasing use of CAM, there are limited data on how paediatricians communicate with mothers and/or patients about CAM. Therefore, we report the studies available in the literature in the paediatric field and summarise what is known about ADRs and risks of CAM, taking into account in particular problems related to interactions between phytotherapy and conventional medicines and to counselling. CONCLUSION:from the analysis of the literature, some interesting aspects emerge: (1) the extent of CAM use in the paediatric field is increasingly sought by parents of children with chronic illnesses; (2) most parents who choose CAM medicine for their children believe that these therapies are "natural" and thus "safe" and (3) physicians often feel to know too little about CAM and wish to learn more for different reasons including "to dissuade whether the alternative method is unsafe and/or ineffective". Therefore, paediatricians should be prepared to discuss alternative therapies with parents, since talking about CAM may help to minimise the risks and to restrain parental misconceptions and doubts. Educational interventions for parents should also be performed to bring about a more aware use of traditional and alternative medicines.

21. Child Adolesc Psychiatr Clin N Am. 2010 Jul;19(3):643-50. Problematic use of energy drinks by adolescents. Kaminer Y.

Energy drinks (EDs) are caffeine-based beverages that commonly contain large doses of sugar, carbohydrates, and a variety of legal stimulants and supplements, such as guarana, taurine, ginseng, and vitamin B complex. These drinks are marketed for young people as natural alternatives that increase fun and improve physical and cognitive performance such as concentration, attention, and alertness. There are commonly held false perceptions that the consumption of EDs can reverse alcohol-related impairment, including motor coordination and visual reaction time, which are crucial for driving safety. This article reviews the literature on EDs and examines problematic use and potential negative consequences in young people. Special emphasis is devoted to safety concerns following combination of EDs with alcohol, which gives the user a false sense of control.

22. Clin Pharmacol Ther. 2010 Feb;87(2):155-7. Use of complementary and alternative therapies in children. Woolf AD, Gardiner P.

The use of complementary and alternative therapies in children has recently shown explosive growth, despite little scientific evidence of benefit, a need for better regulatory oversight, and continuing gaps in the knowledge and attitudes of pediatric health professionals.

25. J Pediatr (Rio J). 2009 Jul-Aug;85(4):287-94. Epub 2009 Jul 7. Dietary supplement use by adolescents. [Article in English, Portuguese] Alves C, Lima RV.

OBJECTIVES: To review the use, benefits and adverse effects of the main dietary supplements consumed by adolescents.

SOURCES: The literature review was performed using MEDLINE and LILACS databases (1997-2008). We analyzed 377 articles, and 52 of them were selected as references.

SUMMARY OF THE FINDINGS: Consumption of dietary supplements is widely spread among adolescents. This habit has often been detected in pediatric and adolescent medicine clinics. Most of the time, the use of supplements is motivated by the search of the ideal body. Other reasons for this practice are: attempt to compensate for an inadequate diet, increase immunity, prevent diseases, improve athletic performance and overcome their own athletic limits. The dietary supplements most frequently used and for which there is little evidence of beneficial effects in healthy adolescents are: proteins, amino acids, beta-hydroxy-beta-methylbutyrate, microelements, carnitine, creatine, vitamins, caffeine, and bicarbonate. This dietary supplementation may be beneficial for competitive athletes who do not have a balanced diet after a specific dietary deficiency has been detected.

CONCLUSION: The unrestrained consumption of dietary supplements should be avoided, since, besides the lack of evidence that such practice will lead to improvement of performance, it exposes adolescents to several adverse effects. Balanced nutrition, with intake of essential energy and nutrients is usually enough to achieve good athletic performance. The use of dietary supplements must be allowed only for selected cases in which specific nutritional deficiencies are identified.

31. J Sch Health. 2006 May;76(5):159-63. The school nurse's role in prevention of student use of performance-enhancing supplements. Garzon LS, Ewald RE, Rutledge CM, Meadows T.

An alarming trend in the United States is the use of performance-enhancing supplements by children and adolescents. These widely available over-the-counter products, often marketed as natural substances, are not regulated by the Food and Drug Administration and are thus widely available. High school and even middle school students are using these supplements because they are misled into thinking that supplements will enhance their athletic skills resulting in an improvement in their performance. Yet, the safety and long-term effects of these supplements have not been established in reputable or prevalent studies. School nurses have a unique opportunity and even an ethical responsibility to help in efforts to address this growing trend. Specific roles for the school nurse include serving as a student advocate for the health and safety of children and adolescents; identifying at-risk students; forming partnerships with teachers, parents, students, coaches, athletic trainers, and local health care providers; evaluating and refining health-oriented curricula; collecting and disseminating new knowledge; and staying abreast of new findings.

34. Am J Health Syst Pharm. 2005 Jul 15;62(14):1476-82. Dietary supplement-related adverse events reported to the California Poison Control System. Dennehy CE, Tsourounis C, Horn AJ.

PURPOSE: Dietary supplement (DS)-related adverse events (AEs) reported to the California Poison Control System (CPCS) were studied.

METHODS: The CPCS database was used to search for all telephone calls from consumers concerning DS-related AEs received during the six-month period between April and September 2002. The calls were characterized according to the substance involved, the caller's age (adult or pediatric), and the type of ingestion (accidental or intentional). Each exposure in which symptoms were reported was categorized as involving an AE. Each AE was assessed for severity and causality.

RESULTS: Data on a total of 1183 telephone calls were retrieved, of which 828 calls (70%) met the study's inclusion criteria. DS exposure occurred in 389 adults (47%) and 438 children (53%). DS ingestion was accidental in 360 patients (43%) and intentional in 467 patients (56%). Exposure resulted in an AE in 480 patients (58%). AEs were reported in 353 patients (74%) who ingested products containing ephedra; other exposures frequently involved zinc, kava, creatine, and valerian. AEs were classified as moderate in 198 patients (41%) who ingested a DS and as severe in 40 patients (8%). One patient had a fatal reaction. Among the 480 AEs in DS-exposed consumers, the DS was classified as the definite cause of 1 AE (<1%) and a probable cause of 237 (49.4%). The most frequently reported AE symptoms were increased heart rate (45%), agitation (30%), vomiting (30%), and nausea (15%).

CONCLUSION: A majority of DS-related AEs reported by consumers to CPCS involved ephedra-containing products.

**The Use of Ergogenic Agents in High School Athletes**

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[Charlene Rosenfield](http://jsn.sagepub.com/search?author1=Charlene+Rosenfield&sortspec=date&submit=Submit), RN, MS

**Abstract**

Statistics reporting adolescent use of ergogenic agents are staggering. According to the Centers for Disease Control and Prevention Youth Risk Behavior Surveillance, 6.1% of students from grades 9 through 12 had taken illegal anabolic steroids without a prescription one or more times during their lifetime. Additionally, more adolescent athletes are using non–Food and Drug Administration-regulated herbal supplements that claim ergogenic benefits. Many athletes either are unaware of or do not consider the possible health risks caused by these agents. School-based programs for athletes may be successful in preventing the use of ergogenic agents by increasing knowledge about such agents and offering skills in critical thinking to improve decision-making skills.

**Family Perceptions of Medication Administration at School: Errors, Risk Factors, and Consequences**

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**Abstract**

Medications are administered every day in schools across the country. Researchers and clinicians have studied school nurses’ and educators’ experiences with medication administration, but not the experiences of children or their parents. This study examined medication administration from the child and parent perspectives to (a) determine problems children experience with medicines at school, (b) clarify risk factors for medication errors, and (c) examine the perceived impact of medication errors on school performance and social relationships. Participants included children ages 8 to 18 years (*n* = 157) being treated at a large Midwestern Children’s Hospital in diabetes, asthma, and Attention Deficit Hyperactivity Disorder (ADHD) clinics. Findings suggest that forgetting a dose and running out of medication were the most common problems. Missing a dose was more frequent in students with ADHD than in students with diabetes or asthma. Medication nonadherence at school, which includes medication administration errors such as missing a dose, may potentially lead to a variety of educational, social/emotional, and physical consequences. These results indicate that the impact of missing medication on children with ADHD appeared to have a greater effect on schoolwork and friendships, while the physical consequences appeared to vary widely based on health condition. Interestingly, children with more self-responsibility for medications were less likely to report medication errors. School nurses will want to include students when planning for medication management at school.